THE TREATMENT OF COMPOUND FRACTURE.

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We are daily being aroused to the fact that what is known as conservatism in surgical practice, is upon many occasions an excuse for cowardice and ignorance, and that bold surgery guided by knowledge, experience and judgment, is the only true and merciful course to pursue in the management of those cases classed under the head of acute surgery.

We are often called to a case that requires ripe decision to determine the proper course to pursue, and it too often occurs that unless the way appears clear for operative interference, the case is left to take care of itself until some disastrous, or complicating symptom demands the attendant to be something more than passive in the matter.

In this paper I refer more particularly to the general practitioner's management of compound fractures and the severer bone injuries. The demands of the case may be clear, even to those having but a limited number of such cases to treat, but owing to this limited practice, absence of instruments and surgical details may be barriers to an honest desire.

I do not desire to convey the idea that the demands of every case are clear, or that a positive decision can be reached at the first examination, but I do want to call attention to a class of cases that are oftentimes mistreated,

because the surgeon, or general practitioner, does not make a thorough investigation at his first visit, and determine what is best for our patient at the outset.

A patient seldom, if ever, objects to a thorough investigation into his wounds while suffering from the first results of an injury, even under an anesthetic, but a proposition to cut made upon your second day's treatment will be met with opposition, and a request to wait a few days and see if all will not turn out well.

If the case be one of compound, comminuted fracture, and in course of a month or two it is found that there is a fragment of detached bone that must be removed before a perfect recovery can be expected, our patient will without much opposition submit.

If the case be one of ununited fracture, and wiring is the best, quickest and safest method of securing union, we will again be permitted to proceed.

A case of compound, comminuted fracture of the left tibia in the lower third fell into my hands about two weeks after the reception of the injury, and up to this time there appeared to be but little effort to repair. The fracture was oblique, passing downward and outward across the anterior surface of the tibia.

The fragments had never, apparently at least, been properly adjusted, for they had slipped past each other, and were also displaced laterally, for the lower projecting point of the upper fragment pressed firmly against the skin at least three-fourths of an inch from its normal position. By extension and every form of manipulation, I failed to get the bones in a satisfactory position, and a Buck's extension was applied with a similar result.

During the course of the next few weeks the bones began to show signs of union, and it was hoped (but how frequently we hope without other foundation than blindness) the case would come out all right, having a crooked tibia.

The serus present from the date of injury made no effort toward closing, and the papillæ gave the usual granular opening as evidence of dead bone.

The new production thrown about the seat of fracture was quite extensive. To insure permanent recovery it was of course necessary to remove the foreign substance.

After chipping away the new bone over the point where the detached sequestrum had been located, the same came into sight and was removed.

The fragment was three inches long and ¼x½ inches thick, and was laying obliquely across the tibia parallel with the line of fracture, but quite a distance from its normal position, which as near as could be ascertained, was from the anterior angle of the tibia.

The time required from this date was equal already to the time consumed in all, six or eight months.

If the ultimate result could have been foreseen, how much valuable time could have been saved and suffering prevented, by cutting boldly down upon the fracture, exposing the ends of the bones, and remove the offending foreign fragment.

All bone denuded of its periosteum must not be considered a foreign substance demanding removal, for we have seen the skull make a thorough repair after being fairly scalped for a square inch or more, and we have also seen spiculæ of bone projecting from a compound fracture, denuded of its external nourishing membrane, returned and never heard of again.

It is fragments of bone, *denuded* of periosteum and detached from well nourished bone, that must necessarily become foreign, and ultimately demand removal.

They have less chance to become revitalized than bone transplanted, as has recently been practiced successfully in the Berlin Hospital.

In questionable cases there would be but one course to pursue, viz., go boldly down and clean out the wound, and

wire if thought best, and by observing antiseptic precautions, allow the wound to heal as a simple fracture.

To more plainly illustrate my position, I herewith append histories of a few cases with specimen:

Case I. G. H., aged 40, had right ulna severely injured while coupling cars.

I saw the case with Dr. McLean, of New Philadelphia, six hours after the reception of the injury.

The continuity of the ulna was destroyed, and the soft parts extensively lacerated, but the radius was not injured. The radial artery was not injured, but the ulnar artery was destroyed, from which was quite extensive hemorrhage. As a question between amputation and excision, the latter course was decided upon.

The entire circumference of the ulna was removed, $4\frac{3}{4}$ inches long, leaving $1\frac{1}{2}$ inches of this bone at the wrist and $3\frac{3}{4}$ inches at the elbow, removing as you see just one-half of the bone.

After establishing drainage, etc., the wound was closed, and the case progressed so favorably that our patient was able to return to duty as a stationary engineer with the work of shoveling, etc., in about four months, with a limb answering almost every purpose.

Case II. H. L., aged 30, seen in consultation with Dr. J. M. Smith, of New Philadelphia, sustained a compound, comminuted fracture of both tibia and fibula in lower third, caused by the leg being caught between the bumpers of two coal cars.

The leg was almost shapeless, the foot rotated outward and laying flat down 90 degrees from its normal angle, and the leg at point of fracture was twisted in an *f* shape.

First demand seemed to be amputation, but upon closer inspection we decided to go down, clean out all fragments of denuded and detached bone, and close with a reasonable amount of assurance that we could save the foot, providing the blood vessels were not too extensively destroyed. We ligated the anterior tibial, and other smaller arteries.

We removed eight pieces of bone, including the tibia for five inches and its entire circumference, excepting a fragment about the size of a lead pencil, split from the posterior portion of the tibia, which was continuous with the lower end of upper fragment, and well protected by periosteum.

The wound thus cleansed of all fragments of bone and foreign substances was drained and closed. The case progressed favorably, and in about two months patient was walking about, and in three or four months, discarded his crutches, and is now a full hand as a laborer, without cane or brace, with 1½ inches shortening.

Case III. H. B., aged 36, received a compound fracture of metacarpal of thumb.

The thumb was just a shapeless mass, the outer fragment was thrown at least an inch across the palm of the hand, and from its normal position.

I had everything ready for amputation, but it occurred to me I would wire the bones and make an effort to save the thumb, which operation was performed and the wound closed.

In six weeks our patient returned to work as a brakeman with a very good thumb, practically perfect.

Case IV. Seen with Dr. Holmes of Port Washington. Aged three years. He had been kicked in the face by a horse, producing a compound oblique fracture of the inferior maxillary. The fracture extended, on the right, externally from a point between the canine and first molar, back of and along the sockets of the teeth and destroyed their power to serve as a post, which prevented the fragments from being secured and held in position with silk. Every means had been used to hold the fragments into position at the command of the attendant, as well as a dentist that had been called in to assist, which included the usual external splints and bandaging, a dental vulcanite splint, etc., etc. I first saw the case on the ninth day after the fracture, at which time the frag-

ment was tilted up above the left at least half of an inch. As all the methods so far employed had failed to hold the bones in position, I decided to wire.

To secure solid bone through which to pass the wire on the right, it was necessary to drill through the bone below and between the roots of the second incisor and canine. The drill passed through the bone into the sublingual cavity, around which a loop of silk was thrown and secured in the notch made in the point of the drill for that purpose. The drill now loaded with the thread is withdrawn.

While the fracture extended to the two right molar teeth, it was superficial enough not to loosen the tooth and destroy its power to support the wire as the other five teeth above mentioned were. The ends of the wire were brought together external to the first left incisor and twisted until the bones were brought into perfect apposition and the teeth on a plane. The ends of the wires were bent upwards between the teeth and cut off just below the crown, which placed it out of the way of injuring the mucous membrane of the mouth.

From this time on there was not a particle of trouble with the case. In about six weeks the wire was removed with a perfect result.

Case V. D. W. C., aged 27 years. Saw case with Dr. J. M. Welch, of Deersville, which was a gun shot wound of middle third of left humerus, the contents of a shotgun passing through the arm from internal to the thickest portion of the biceps, and making its exit near the insertion of the deltoid.

The humerus was entirely torn off, but not shattered longitudinally. The patient favored amputation at my first visit, but we concluded to adjust fracture and wait for results.

The bones showed no signs of union, and the case was complicated by a severe hemorrhage three weeks after the injury, and at this time the patient insisted upon amputa-

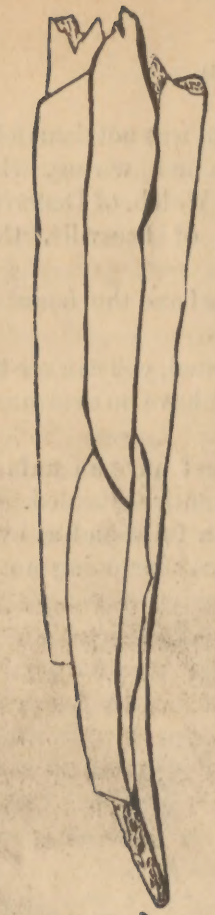
tion. I assured them that amputation was not demanded, but instead I would advise excision and wiring, which operation was done, assisted by Drs. Welch, of Deersville, Pumphrey, of Freeport, and Clark, of Leesville, three months after the injury.

Two inches of the bone was removed and the bones adjusted and wired firmly together.

From the specimen herewith presented, you can see that the ends of the bone were ragged, and have no evidence of repair.

The case from date of wiring did not have an unfavorable symptom, and in six months was entirely healed.

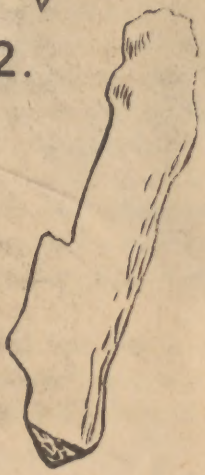
The man is a farmer, and has made a full hand at every kind of work ever since, the two inches shortening not interfering with him in the least.



CASE 1.

CASE 2.

CASE 5.



EXACT SIZE OF BONES.

Small bone is one removed in case described in the paper.